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ABSTRACT

The paper addresses the nature of the physical environment of classrooms for young handicapped children. Research is cited on the factors important in successful interventions in five areas (sample subtopics in parentheses): social interaction (materials that promote interaction, staff-child ratios); language learning (importance of engaging interest in materials, the role of routines); disruptive behavior (avoiding and decreasing behavior problems); independence and transition (interaction with the environment); and learning during instruction (group size, density and arrangement, scheduling). Environmental support for staff is considered including open environments which facilitate supervision and communication and use of functional areas within the classroom with all necessary materials on hand. Ways to evaluate environmental arrangements are noted. A list of 11 questions regarding ways to adapt or arrange the environment for the special needs of physically handicapped students concludes the paper. (CL)

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Arranging Preschool Environments for Young Handicapped Children

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The last 15 years have brought tremendous progress in developing curricula and comprehensive service programs for young, handicapped children. However, the technology for efficient and effective intervention with all handicapped children is not yet complete. One aspect of programming which has not been explored fully is the design of classroom and treatment settings most conducive to learning and care of such children. Federal, state, and local health requirements provide minimal guidance by regulating the size of classrooms, sanitation conditions, and number of staff. Such regulations offer no directions for creating environments that are supportive of handicapped children and their teachers. Environmental arrangement has a rich "folklore" of common sense suggestions shared formally (in textbooks) and informally through generations of teachers. Many of these suggestions are excellent; few are based on data.

There is no single body of experimental literature which reports the impact of setting on handicapped children's behavior. There are a number of descriptive ecological studies which assess informally (without specific research design) the effect of setting on normal children's play and learning (e.g., Gump, 1969). A few behavioral ecology studies have examined the effect of specific non-social environmental conditions on children's behavior (e.g., Quilitch & Risley, 1973). In addition, the behavior analysis literature (cf. Journal of Applied Behavior Analysis, 1968-1981) contains many experimental evaluations of the impact of social contingencies on the behavior of normal and handicapped children. Only a small number of studies have included handicapped children under the age of five. In the absence of a cohesive body of literature about environmental arrangement for handicapped children, ideas must be gleaned from existing studies which address a large range of behaviors with subjects of different ages and ability levels.

What constitutes an environment? The classroom includes both physical and social components. Broadly defined, the class of physical variables includes the following: the actual classroom space; the arrangement of activity areas within that space; the furniture and fixtures; play and work materials (not discussed here as specific curriculum materials); the program and sequence of its activities, the number of staff; the number and type of children (handicapped and nonhandicapped); and the groups of staff and children. Social variables are the behaviors of the adults and children in the setting.

This paper is primarily concerned with the physical components of the classroom, although, in reality, it is impossible to separate the effects of physical and social components. People behave in a physical setting and their behavior is part of the setting. A classroom is a dynamic system--changes in the setting will effect behavior changes in both children and staff. Although it may not matter to the practitioner how positive changes occurred--only that they do occur--it is useful in experimental studies to examine these two levels of change separately. In some instances, the use of social variables (such as teacher attention) may help to establish contact with the setting conditions or to build new skills. For these reasons, a somewhat broad view of environmental variables is offered. This viewpoint does not lessen the importance of arranging the physical environment, it simply suggests that physical and social components of a setting interact and should be considered jointly.

What should environments for young handicapped children do? Ideally, classroom environments should support the behaviors and skills that are appropriate for the group of children in the setting. With that basic assumption in mind, this paper presents specific classes of behavior

that are important in successful interventions with handicapped preschoolers: (a) social interaction, (b) language and communication, (c) learning during instructional activities, (d) disruptive behavior, and (e) independence and maintenance in other settings. Two additional topics are considered: environmental support for teachers and staff, and meeting the needs of children with specific physical handicaps.

Social Interaction

Preschool environments should promote social interaction with peers and offer opportunities to learn new social skills. The classroom can be structured in several ways to facilitate social development: by providing peers as playmates and as models of desired behavior; by including materials which encourage social interaction; and by arranging staff and activities to foster child-child contact. Some of these conditions are typical in mainstreamed classrooms. However, in light of the importance of social development, the means for achieving these conditions merits further discussion.

Handicapped and nonhandicapped children: Playing and learning together.

In order for handicapped children to benefit from the presence of normal peers they must have indirect (observing them engage in appropriate behavior) or direct (verbal and nonverbal social interchanges) contact with them. When handicapped children play with their nonhandicapped classmates, increased parallel and cooperative play by the handicapped children occurs (Rogers-Warren, Ruggles, Peterson, & Cooper, 1981). However, segregation, rather than integration, occurs frequently (Peterson & Haralick, 1977) and spontaneous imitation of peer models is rare (Guralnick, 1978; Sullivan, 1977). Enrolling handicapped and nonhandicapped children in the same classroom may be a necessary, but not entirely sufficient condition for increasing

social interaction skills of either group. Other socially based interventions may be needed to gain the maximum benefits of these arrangements: pairing children with different skills through teacher prompts and praise; prearranging seating placements; and setting rules that require bringing a friend for entry into attractive activities. Specific training to imitate peers or to initiate contact with them may also be needed.

Materials that promote social interaction.

Some materials are more likely to set the tone for social interaction than others. With normal preschoolers and primary grade children, wagons, hollow blocks, dramatic play materials, and games which require two players promote conversation and joint activity (Quilitch & Risley, 1973; Shure, 1963; Van Alstyne, 1934). Handicapped preschoolers show similar patterns of social play; they interact more with peers during block play and manipulative floor play than during art and table activities (Peterson & Haralick, 1977).

In all activities, handicapped children are socially isolate (unengaged in activities) more frequently. Handicapped children also exhibit less sophisticated levels of play than their normal peers do in the same areas (Rogers-Warren et al., 1981). The presence of social materials and activities may have a favorable effect on handicapped children but may not promote social interaction to the same extent as for normal children. For example, dramatic play activities, which set the occasion for conversational and imaginative games, may have a smaller impact on children with limited communication skills than on those with good skills.

How many teachers?

Larger staff:child ratios (1:4 vs. 1:10) are usually suggested for programs in which handicapped children are enrolled. There are few data

documenting the effects of teacher:child ratio on the social interactions of handicapped preschoolers. However, normal preschoolers interact with peers less frequently when ratios are larger (1:3.5 vs. 1:7) (O'Connor, 1975). The presence of a greater number of adults tends to increase transition time from one activity to another and decrease child participation in activities, especially with very young children (Stodolosky, 1974).

However, adult presence may play a mediating role with lower functioning children. Adults attract children to activity areas and maintain child interaction with materials (Hursh, 1973). When peer interaction skills are very limited (as is the case with institutionalized children) adults represent the greatest number of opportunities for conversation and social interaction (cf. Berkson & Landesman-Dwyer, 1977). Further investigation of the effects of staff ratios on social interaction is needed.

Guidelines for facilitating social interaction.

1. Integrating normal and handicapped children provides necessary opportunities for social interaction among the children, but this may not be a sufficient condition to promote appropriate levels of interaction or skill development for the handicapped children.

2. Play equipment and activities that require more than one child support parallel and cooperative play.

3. Teacher presence can interfere with peer interaction. However, effects of teacher presence need to be assessed in such a way that specific levels of children and staffing patterns can be adjusted to meet the classroom's immediate social and academic priorities.

4. Highly verbal materials which promote social interaction with normal children will be less effective for children with limited communication skills; the provision of nonverbal alternatives may be needed to facilitate initiating peer interactions and activities.

Language Learning

There is a large body of language remediation literature, but there are relatively few studies of classrooms arranged to promote language learning. Generally, recommendations for facilitating social interaction apply to language development as well. When children are engaged with materials, have a routine to follow, and have someone to talk to, there will be opportunities to use and to learn language. In addition, classrooms should support generalization of newly learned communication skills and provide opportunities to learn additional skills.

The importance of materials and child engagement.

The first step in promoting language display in the preschool classroom is engaging the child's interest in materials (Hart & Risley, 1975). If the child is involved with materials and if this involvement is reinforcing, there will be opportunities to teach new skills and to support language use. Arranging attractive materials so that some are visible but not immediately accessible will increase the initiations of contact with the adults or peers who dispense these materials. Materials similar to those used in one-to-one training are useful in promoting generalization of newly learned labels, especially with very low functioning children (Warren & Rogers-Warren, 1980); however, initially teacher queries or prompts may be needed to elicit responses to these materials. Novel materials may elicit questions from children wtih more sophisticated skills (Warren, Baxter, Anderson, Marshall, & Baer, 1981).

Routines.

Routines allow the child to hear appropriate verbalizations repeatedly in a consistent, nonverbal context. As the children's verbal skills increase, they fill in the verbal components of the interaction and antici-

pate the next steps in the routine (Moerk, 1977). Halle, Marshall, and Spradlin (1979) demonstrated one way in which routines can promote spontaneous language use by retarded adolescents: When students approached the cafeteria line to pick up their trays of food, the attendant held the tray and did not release it until they said "tray please"; this response had previously been modeled in the context of this particular routine. In a second study, Halle, (1981) demonstrated that teachers of preschool, handicapped children could interrupt established routines (for snacks, leaving the classroom, entering the bathroom, and so forth) and, by delaying the next step, successfully prompt children to make verbal requests for the next step of the routine. This strategy for shaping spontaneous requests depends equally on the structure of the environment (routines, limited access to some reinforcing events or materials) and on teacher mediation (delaying the next, familiar step in the routine as a prompt for language).

Peers: Someone to talk to.

The importance of skilled peers in classrooms for handicapped children is highlighted in a study by Paul, Rogers-Warren, and Spradlin (1978). Language-delayed preschoolers talk more in groups composed of one language-delayed child and two normal peers than in groups with three language-delayed peers. After practice with normal peers, some handicapped children increased their speaking in the presence of language-delayed peers. However language-delayed children have been observed to talk less in an integrated classroom than in the normal classrooms and daycare centers in which they were also enrolled (Paul & McQuarter, 1979). The presence of competent peers does not guarantee communication, but it does increase the probability of its occurrence.

Teachers: Someone else to talk to.

The presence of a teacher also increases talking by language-delayed children (Warren & Rogers-Warren, 1980); however, high rates of teacher-initiated talking tends to limit peer verbal interactions (Rogers-Warren & Warren, 1980). The number and availability of teachers should be determined by the communication goals for the children in the classroom. Building basic communication skills and frequent verbal initiations requires a highly responsive environment, best engineered by several attentive teachers. However, limiting the number of teachers or the frequency of teacher-initiated child contacts may facilitate peer verbal interactions.

Topics, listeners, and opportunities to talk--some recommendations:

1. The presence of attractive materials facilitates communication. If children like playing with the materials, they will ask for them and the environment can be arranged to prompt such asking.

2. Objects and pictures used in one-to-one training promote generalization to the classroom.

3. Opportunities to talk should be built into the daily routines.

4. Conversational partners, both peers and teachers, are essential in developing language skills.

Arranging Instructional Settings

Special instructional settings are often arranged to provide more individual teaching and fewer distractions than might normally occur. Restricted environments, such as cubicles within the classroom, have proven to have only small positive effects on children's learning (cf. Cruickshank, Bentzen, Ratzeburg, & Tannehauser, 1961; Haring & Phillips, 1967; Shores & Haubrick, 1969). Concern for generalization of newly learned skills, preparing students for mainstreamed settings, and limited availability of

staff necessitate decreasing the amount of one-to-one teaching.

Group size.

Several studies have shown that retarded and autistic children learn as well or better in small group situations where they have opportunities to observe peers than in one-to-one teacher-pupil situations (cf. Biderdorf & Pear, 1977; Favell, Favell, & McGimsey, 1978; Frankel & Graham, 1976). No research has reported investigation of learning by handicapped children in larger groups (more than 10 children); however, studies by Barker and Gump (1965) and by Dawes (1934) suggest that normal children's participation decreases with increasing group size.

Density and arrangement.

Considerable research has examined the effects of density in normal preschool settings (cf. Loo, 1972; McGrew, 1970). Disruptions increase with crowding but teachers typically minimize these effects by becoming more directive (Fagot, 1977). No studies of crowding have been done with handicapped preschoolers, but Krantz and Risley (1977) reported that spacing preschool children around the teacher during an instructional period increased their attention to the task and to the teacher. Placing children together on a single large rug decreased attending and increased disruptions. Positive teacher attention for appropriate behavior was sufficient to restore high levels of attending during the crowded conditions.

Scheduling.

It seems that consistent scheduling promotes attention to task. Within the consistent schedule, a sequence which gradually decreases activity level (from very active play to group instruction, for example) may limit disruptions and increase child attention (Krantz & Risley, 1977). Changes in setting (from outside to inside, for example) may also prompt attending during

instructional periods (Hawn, Holt, & Holmberg, 1973). Providing alternative activities which do not require waiting is an excellent way to limit disruptions and increase child participation (Doke & Risley, 1972; LeLaurin & Risley, 1972). Simultaneous scheduling of several activities allows children with different attention spans to have continuous opportunities for participation and may be an especially useful design for integrated classrooms.

Recommendations for instructional settings:

1. Group instruction may be as effective as one-to-one teaching if opportunities to respond, to observe peers, and to receive attention from the teacher are available.

2. A schedule which provides simultaneous activities and eliminates waiting increases child participation, and limits disruptions.

3. Scheduling moderately active periods between high activity periods and instructional periods facilitates attention to task.

4. Spacing children so that they avoid physical contact with each other during group instruction also increases attention to teacher and materials.

Managing Behavior

Handicapped children often present specific behavior management problems. Although there is a well-developed technology for reducing inappropriate behavior and increasing positive skills, careful arrangement of the classroom can ease application of behavior management procedures and, in some cases, reduce the need to apply them.

Avoiding disruptive behavior.

Disruptions occur most frequently when children are waiting for activities to begin, are in transition from one area to another, or are in very

close contact with each other (Fowler, 1982). Scheduling simultaneous or overlapping activities allows children to move to the next activity when they are ready, thus increasing their participation and reducing disruptions (Doke & Risley, 1972). Assigning teachers to activities, rather than to specific children, promotes monitoring children's behaviors which, in turn, can also reduce disruptions (LeLaurin & Risley, 1972). Avoiding the crowding of children together in small areas and scheduling active and quiet times successively also limit disruptions (Krantz & Risley, 1977). Pairing children in activities so they may observe appropriate models of peer behavior and teacher response to the behavior may reduce problem behavior without direct intervention (Peck, Cooke, & Appoloni, 1981). Establishing clear boundaries for activities by arrangement of furniture also helps children learn that certain behaviors are expected in certain places (Fowler, 1982). Thoughtful placement of space-consuming activities so that they do not block pathways and access to other areas is likely to reduce cross-traffic and disruptions as well (Krantchevsky, Prescott, & Walling, 1977).

Modifying disruptive behavior.

When it is necessary to use a specific procedure to limit disruptive behavior the effects of the procedure can be maximized and its use minimized through arrangement of the environment. For example, if time-out procedures are to be effective, the setting must be attractive and reinforcing to the child. There must be frequent opportunities for positive engagement with materials, teachers, and peers. Very brief or mildly punishing procedures, such as sit and watch (Porterfield, Herbert-Jackson, & Risley, 1976), will be highly effective where child engagement with materials is frequent. Chair-timeout is most effective when the timeout area is away from pleasant sights and sounds, and out of the way of passersby. The consistent use of a particular chair will increase the effectiveness of sit-and-watch or

time-out procedures in the same way that the use of clearly demarcated areas for various activities will promote appropriate behavior in those areas.

Managing environments and behavior:

1. Engaging children with materials and other people limits the probability of disruptions and makes procedures to reduce inappropriate behavior more effective.

2. Scheduling simultaneous and overlapping activities limits the time needed for transition and waiting; it can also effectively reduce disruptive behavior and increase participation.

3. Spacing children apart from one another during group activities limits disruptions and increases attention.

4. Providing clear boundaries for activities and consistent procedures and rules in each area will help children learn appropriate behaviors. Unobstructed pathways and easy access to needed materials reduce disruptive movement through adjacent areas.

Building Independence and Facilitating Transitions

Notably absent in the literature is the systematic investigation of the environmental conditions which promote acquisition of self-control and independence by handicapped children in classroom settings. Recently, Fowler and her colleagues have begun to investigate some of the environmental arrangements that facilitate transition into more typical public school settings (Fowler, 1982), but the need for research in these areas is paramount. In lieu of a specific research base, the following suggestions are based on environmental design guidelines for the handicapped (cf. Cary, 1978), very limited analyses of environments for normal preschool children (cf. Montes & Risley, 1975), and some emerging data on institutional environ-

ments for severely handicapped residents (cf. Sandhu & Hendricks-Jansen, 1976; Zukotynski & Ogolosky, 1981).

Building independence.

Many curricula for young, handicapped children build independence through the training of self-help and language skills. The classroom environment can be arranged to provide opportunities for children to determine their own behavior and manage some of their own materials. Many of the aspects of classroom arrangement discussed in previous sections are pertinent to the building of independence by children. Classrooms should allow the child accessibility to those things that are frequently needed: bathrooms, drinking fountains, and play materials. Many handicapped children cannot manage materials or self-help routines entirely alone, but even small approximations will help them build independence. For example, when bathrooms are immediately adjacent to the classroom, equipped with stabilizing bars and stepstools, as needed, children with moderate physical skills can complete at least a portion of toileting and handwashing activities with minimal guidance. Even wheelchair-bound and minimally mobile children can select materials from open shelves that are placed at a convenient height. Very simple color codings on materials and storage areas will help very young or unskilled children find and replace materials.

Research by Montes and Risley (1975) concludes that children spend more time actually playing with manipulative objects when they are stored on open shelves than when they are stored in toy boxes which require the child to sort through the toys to find the desired object. To encourage engagement, materials should be at child level and easily accessible. Allowing the child to keep some materials (crayons, notebook) in a locker or cubbie will prepare the child for the public school system of self-managed

materials. Opportunities to pour juice, pass out napkins, prepare snack foods, choose a place to sit, or select a musical instrument are good examples of allowing the child to manage small aspects of the environment. (A supportive environment, in this case, is the absence of a prearranged setting!) A consistent daily routine will also facilitate independent functioning with a minimum of teaching instructions.

A preliminary goal in building independence with multiply handicapped and very low functioning children may be that of establishing their interaction with the environment. The use of mirrors, mobiles, easily activitated switches controlling lights, music, and air, and slides of familiar persons have been shown to increase environmental interactions by institutionalized, profoundly retarded children and adolescents (Sandhu & Hendricks-Jansen, 1976; Zukotynski & Ogolsky, 1981). Arranging settings so that attractive objects are within reach and touch of the very limited child, and designing and assembling new systems which allow them to control even small aspects of their surroundings are among the most basic considerations in arranging the environment.

Preparing for transitions.

The differences between preschools and public school kindergartens and primary classrooms can present difficulties for the handicapped child making a transition from one setting to another. Many of the supportive arrangements discussed earlier will not be present in a public school classroom containing more children and fewer teachers. Smooth transition into the new setting may be facilitated by altering some arrangements in the preschool during the last months of school to help "graduates" learn the behaviors the new setting will require (Fowler, 1982). Typically, classrooms for older children will have desks (rather than tables), fewer adults and

less individualized attention, longer periods for each activity, and more specific rules regarding speaking out in groups and during work time. Varying the preschool environment to give children the opportunity to practice behavior appropriate to a range of settings will help them maintain these behaviors in the new setting.

Facilitating Desired Staff Behavior

Classrooms are behavior settings for adults, too. In order for the environment to facilitate desired child behavior, it must support desired staff behavior. Relatively little research has examined staff support through environmental arrangements in settings for handicapped children. Work by Risley and his colleagues (cf. Twardosz, Cataldo, & Risley, 1974; Herbert-Jackson, O'Brien, Porterfield, & Risley, 1977) provides most of the data and the clearest guidelines for arranging environments to support desired staff behavior.

Open environments, characterized by low dividers separating activity areas, facilitate supervision of young children without interfering with their activities (Twardosz, Cataldo, & Risley, 1974). Such arrangements also promote communications among staff, allowing them to assist each other as needed and to anticipate children's needs as they move from area to area.

Assigning teachers to specific zones or activities is a more efficient plan than assigning teachers to small groups of children (LeLaurin & Risley, 1972). With this approach, teachers are responsible for children only when they enter their particular area. Children are free to move from one area to the next as they complete activities and little or no waiting is necessary. Teachers spend more time teaching and less time directing transitions.

Dividing the classroom into functional areas with all necessary materials on hand will save steps and llimit time away from children (Herbert-Jackson et al., 1979). Posting daily schedules and staff responsibilities

in a prominent place is an effective means of informing and monitoring staff (LeLaurin, 1973). Posting communication and behavioral goals for each child as well as cues for behavior-building procedures will increase appropriate instructions.

Evaluating Environmental Arrangements

There are several ways environmental support for desired child and staff behaviors can be evaluated. In any observation system, the critical child behaviors to monitor are engagement (use of materials) and inappropriate behavior. High levels of appropriate engagement indicate that children find the environment reinforcing of that engagement (Hart & Risley, 1975). Inappropriate behaviors are a useful index of child adjustment to the setting (Carden-Smith & Fowler, 1981; Walker & Hops, 1976). Staff behaviors to be observed should include physical presence, engagement with children, and other nonteaching activities (e.g., maintenance chores, interaction with other staff).

The PLA-check system (Planned Activities Check) (Risley & Cataldo, 1974) can be used to monitor children's behavior at specified intervals (for example, every 6 minutes throughout the day). To implement a PLA-check, appropriate and inappropriate behaviors are established for each of the daily activity periods. At the specified time, the number of children who are present in the activity area and participating appropriately are counted. Data can be summed for each activity period for the entire day and a percentage of appropriate engagements displayed as a measure of environmental effectiveness.

A scanning scheme (Rogers-Warren, 1975) yields similar information. In the scanning procedure, an observer successively looks at each child and staff member (usually in a predetermined order) for 3 seconds, recording one

person's behavior before observing the next person. Scan codes can be simple or elaborate, depending upon the number and type of behaviors to be observed. For example, levels of cooperative play or use of various types of materials can be defined and observed. Scan codes can be used to monitor children and staff, selected children, or only staff. The length of the interval and frequency of scanning are variable depending on the type and number of behaviors being monitored. Scan codes can be used to monitor activities in several areas concurrently or sequentially.

Monitoring the environment does not always require interval observation, since many environmental variables remain constant during an entire activity period. Preparing a sketch of the setting, a list of procedures in effect (time-out, rules, etc.), and activities for the observation day, and noting the context of inappropriate behaviors as they occur is a straightforward way to record setting variables. A 5-minute environmental observation using checklists can precede and follow the observations of child and staff.

Teachers or staff members should take turns collecting child, staff, and environmental data. The act of stepping outside the system and observing interaction and environmental variables is usually very helpful in understanding and redesigning settings.

Meeting the Special Needs of Physically Handicapped Children

The physically handicapped child presents special needs that can be accomodated by selectively arranging the classroom. Because there is almost no research on environmental design for handicapped preschoolers, the following checklist is suggested as one means of determining if a specific setting meets the needs of a particular child. (Some of the checklist questions may also be useful in evaluating settings for children who have no physical

impairments.):

1. How does the setting look at the child's level? Are there interesting things to see and touch? Windows, mirrors, acquaria, and toys are attractive options.

2. Is there room for the wheelchair-bound or awkward but mobile child to negotiate in and out of spaces; to turn around?

3. Are shelves and tables at a comfortable level for the child's height? Is there a place (preferably more than one) that can accommodate the child in each activity area?

4. Are shelves, tables, sinks, and so forth sturdy enough to hold the weight of a minimally mobile child who may need support.

5. Are prosthetic devices (such as a standing cuff) easily accessible in the areas where children might gain practice standing or sitting without adult support while engaged in an activity?

6. Are some of the materials and toys accessible to the child without assistance even if he or she is minimally mobile?

7. Is the sound-level and acoustical arrangement of the room satisfactory for the child with a hearing impairment and/or a hearing aid? Background noise can be uncomfortable and distracting in uncarpeted rooms. Some special quiet areas would probably benefit hearing impaired children.

8. Does the environment contain sufficient contrasts to attract the notice of a visually impaired child? Do color and sight contrasts corroborate texture and height contrasts? For example, steps, ramps, and other variations in floor levels should contrast with the surrounding floor areas to draw attention to changes in height.

9. Are the cues (use of color, change of levels, dividers) which designate different areas clear and consistent? For example, a carpeted corner set

aside for independent, quiet play (puzzles or picture books) might be painted or papered to indicate its separation from the rest of the classroom. Color and textures can also demarcate learning centers from freeplay areas, and if used consistently can help a child identify the area and its contents.

10. How much of the environment is designed for self-management or self-engagement? How frequently does the child use these opportunities? Does the child need training to use these opportunities?

11. Does the arrangement of the room allow for quiet places and social places to meet the changing moods and needs of the child?

Summary

Designing supportive environments begins with determining the desired child behaviors for a specific activity setting. Behavioral and environmental data should be collected and used as a basis for decision-making and for determining the effects of new arrangements. No single arrangement is best for every child. The ideal arrangement is the one which efficiently supports behaviors that are appropriate to the children's skills and needs.

Research on specific aspects of environmental planning for young handicapped children is extremely sparse and much needed. The impact of various settings and the interaction between environmental arrangements and staff behavior should be analysed to verify benefits of child-oriented classroom settings.

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